



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/590,657	06/07/2000	Bart J. Bombay	59.0027	9534
25576	7590	07/12/2005	EXAMINER	
SCHLUMBERGER CONVEYANCE AND DELIVERY			CHANG, EDITH M	
ATTN: ROBIN NAVA			ART UNIT	
555 INDUSTRIAL BOULEVARD, MD-1			PAPER NUMBER	
SUGAR LAND, TX 77478			2637	

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Sm

<b>Office Action Summary</b>	<b>Application No.</b> 09/590,657	<b>Applicant(s)</b> BOMBAY ET AL.	
	<b>Examiner</b> Edith M. Chang	<b>Art Unit</b> 2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 April 2005.
- 2a) ☐ This action is FINAL.                      2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2,4-11,15,19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☒ Claim(s) 2,4-11,15,19 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Objections*

1. Claims 2, 4-1, 15 and 19-20 are objected to because of the following informalities:

Claim 2, line 15: "a first propagation mode and having logic" should be changed to "the first propagation mode and having a second propagation mode cross-talk adjustment logic"; line 16: change "a second" to "the second"; lines 21-22: "the cross-talk adjustment logic" should be changed to "each of the first and second mode cross-talk adjustment logics".

Claims 4 & 5, lines 1-2: "the far-end adaptive" should be "the adaptive far-end".

Claim 6, line 1: "wherein a far-end cross-talk parameter update logic directs" should be "further comprises a far-end cross-talk parameter update logic directing".

Claim 7, lines 15-16: "receive samples on a first propagation mode and having logic to direct the processor to accept samples from a second propagation mode" should be changed to "receive samples to a first frequency domain equalizer on the first propagation mode and having a second propagation mode cross-talk adjustment logic to direct the processor to accept samples to a second frequency domain equalizer from the second propagation mode" to be the antecedence of the "equalizer coefficient" recited in the line 29 of the claim 7;

Line 20: "further wherein" should be "wherein"; line 22: "carriers and to compute" should be changed to " carriers to a far-end cross-talk determination circuit and to

Art Unit: 2637

compute”; lines 23-24: “a carrier specific coefficient” should be “a carrier specific coefficient for the far-end cross-talk determination circuit”;

Lines 24-26: “update each carrier specific coefficient by applying the equation:  $CXY_i = CXY_i +$  ” should be changed to “update each carrier specific coefficient by applying the following:  $CXY_i +$  ”;

Lines 29-30: “the frequency domain equalizer coefficient for the  $i$ th carrier of propagation mode X” should be “the frequency domain equalizer coefficient of the first frequency domain equalizer for the  $i$ th carrier of the first propagation mode X”;

Lines 31-32: “the cross-talk cancellation coefficient for the  $i$ th carrier for canceling far-end cross-talk from propagation mode X to propagation mode Y” should be “the carrier specific coefficient for the far-end cross-talk determination circuit for canceling far-end cross-talk from the first propagation mode X to the second propagation mode Y”;

Line 37: “the frequency domain data point” should be “a frequency domain data point of the received sample”.

Claim 8, line 1: “the far-end” should be “the first propagation mode”; line 3: “these” should be “the  $m$  samples”.

Claim 9, line 2: “the slice determination” should be “a slice determination”; line 4: “a slice residual” should be “the slice residual”.

Claim 10, lines 15-16: “receive samples on a first propagation mode and having logic to direct the processor to accept samples from a second propagation mode” should be changed to “receive samples to a first linear adaptive equalizer on a first

Art Unit: 2637

propagation mode and having a second propagation mode cross-talk adjustment logic to direct the processor to accept samples to a second linear adaptive equalizer from the second propagation mode" to be the antecedence of the "equalizer coefficient" recited in the line 28 of the claim 10;

line 20: "the far-end" should be "the first propagation mode";

line 21: "these" should be "the m samples", "receive m samples" should be changed to "receive m samples to a linear adaptive cross-talk determination logic";

lines 25-26: "using the equation:  $CXY_i = CXY_i +$ " should be "using the following:  $CXY_i +$ ";

line 28: "the ith time domain equalizer coefficient of " should be "the ith domain equalizer coefficient of the first linear adaptive equalizer of the first ";

lines 29-30: "the ith cross-talk cancellation coefficient for canceling far-end cross-talk from propagation mode X onto propagation mode Y" should be "an ith coefficient for canceling far-end cross-talk of the linear adaptive cross-talk determination logic from the first propagation mode X onto the second propagation mode Y";

lines 34-35: "the cross-talk adjustment logic" should be "a summer"; line 36: "for propagation mode X" should be "for the first propagation mode X".

Claims 11 & 20, line 2: "the range" should be "the range from".

Claim 15, line 4: "a first propagation mode" should be "a first propagation mode to a first frequency domain equalizer"; line 5: "a second propagation mode" should be "a second propagation mode to a second frequency domain equalizer";

Art Unit: 2637

line 9: "the cross-talk component" should be "the cross-talk component of a far-end cross-talk determination circuit";

lines 15-16: "applying the function:  $CXY_i = CXY_i +$ " should be "applying the following:  $CXY_i +$ ";

line 19: "for ith carrier of" should be "for the ith carrier of the first";

lines 21-22: "the cross-talk cancellation coefficient for the ith carrier for canceling far-end cross-talk from propagation mode X to propagation mode Y" should be "the carrier specific coefficient for the far-end cross-talk determination circuit for canceling far-end cross-talk from the first propagation mode X to the second propagation mode Y";

line 25: "RMS magnitude of magnitude of" should be "the Root Means Square (RMS) magnitude of";

line 28: "propagation mode X" should be "the first propagation mode X";

lines 29-30: "the Y propagation mode" should be "the second propagation mode Y".

Claim 19, line 4: "a first propagation mode" should be "a first propagation mode to a first linear adaptive equalizer"; line 5: "a second propagation mode" should be "a second propagation mode to a second linear adaptive equalizer";

line 9: "the cross-talk component" should be "the cross-talk component of a linear adaptive cross-talk determination logic"; lines 9-10 "a first sample" should be "a first set of samples";

lines 13-14: "equation:  $CXY_i = CXY_i +$ " should be "following:  $CXY_i +$ ";

Art Unit: 2637

line 16: "for propagation mode X" should be "for the first propagation mode X";

line 17: "sample" should be "set of samples";

lines 20-21: "the cross-talk adjustment circuit" should be "a summer", line 21: "for propagation" should be "for the first propagation".

Appropriate correction is required.

### ***Allowable Subject Matter***

2. Claims 2, 4-11, 15 and 19-20 would be allowable if rewritten to overcome the objection(s) set forth in this Office action.

3. The following is a statement of reasons for the indication of allowable subject matter:

Claims are allowable over prior art of record because the prior art of record does not teach or suggest, alone or in a combination, among other things, at least a digital telemetry system and its method as a whole, the combination of elements and features as claimed, which includes the receiver receiving signals on at least two propagation modes; the adaptive far-end cross-talk cancellation logic for canceling cross-talk occurred between the two propagation modes; and a first propagation mode cross-talk adjustment logic directing a processor to determine a slice residual and update a cross-talk parameter from the slice residual as cited in the claims.

### ***Conclusion***

Art Unit: 2637

4. This application is in condition for allowance except for the following formal matters: as stated in the claim objection paragraph.

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.


A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M. Chang whose telephone number is 571-272-3041. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay K. Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang  
July 6, 2005

  
YOUNG T. TSE  
PRIMARY EXAMINER